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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ADHAMI, MOHAMMAD SAJID	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/926,707	Applicant(s) OHKUBO ET AL.	
	Examiner Mohammad S. Adhami	Art Unit 2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1,5,8, and 10 are objected to because of the following informalities: It is unclear which signal is referred to as the "received signal". Appropriate correction is required.
2. Claims 4 and 13 are objected to because of the following informalities: The claim refers to a "pass diversity." The examiner believes this to be a typo and should correctly be "path diversity." The following examination is made with the assumption the "path diversity" is the correct phrase. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 14-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim limitation of "retransmitting a multicast signal having the greatest receiving quality among said received signals" is not recited in the specifications.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1,2,5,6,8,10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuya (US 4,888,767).

(Re claims 1,5,8, and 10) Furuya discloses “a mobile station in [a group of] mobile stations sending a retransmission request signal to [a] base station when [a] mobile station detects an error in a received multicast signal” (Col.2 lines 34-36 “each of the receive stations checks more than one received packets for error and sends back to the transmit station a repeat request signal” and Abstract “a single transmit station transmits the same message to a plurality of receive stations” where the message is a multicast signal).

(Re claims 1,2,5,6,8,10, and 11) Furuya further discloses a “base station judging whether a received signal indicates a retransmission request according to receiving quality of said received signal, and retransmitting a multicast signal corresponding to said retransmission request when said received signal indicates

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said retransmission request" (Col.2 lines 39-44 "the transmit station senses energy of each of the bursts of the signals sent from the receive stations and determines packets to retransmit in correspondence with the time slots of the bursts in which energy greater than a predetermined value [was] sensed" where the "predetermined value" is a threshold).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya.

As discussed above, Furuya meets all the limitations of the parent claims.

Furuya does not explicitly disclose "when there are a plurality of received signals each having a receiving quality which is greater than a threshold, [a] base station preferentially retransmits a multicast signal corresponding to a received signal having the greatest receiving quality among [the] received signals."

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Furuya to "preferentially retransmit a multicast signal corresponding to a received signal having the greatest receiving quality among

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[the] received signals” because in a system where the base station will retransmit the multicast signal to a plurality of mobile stations, it does not matter which mobile station sends the request, so the signal with the greatest receiving quality is the easiest detected signal and hence is the one that corresponds to the multicast signal that is retransmitted because of the retransmission request.

9. Claims 17,19,20,24-26,28,31,32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm (US 6,208,663) in view of Furuya.

Re claims 17,19,20,26,28,32,34, and 35:

Schramm discloses “a mobile station sending a retransmission request signal to [a] base station when [a] mobile station detects an error in a... signal” (Col.3 lines 5-7 “ARQ techniques involve analyzing received blocks of data for errors and requesting retransmission of blocks which contain any error”).

Schramm further discloses a “base station monitoring a receiving state of said...signal in said mobile stations, and changing a transmission method to conform to [a] receiving state according to a result of monitoring, and sending a...signal” (Col.4 lines 12-15 “When a request for retransmission is received, e.g., at a base station in a radiocommunication system, the FEC coding and/or the modulation which was originally used to transmit the block can be changed” where on Pg.6 lines 34 and 35 of the specifications, monitoring the receiving state is described as receiving the retransmission request signal, “The receiving state can be monitored by receiving the retransmission request signal”).

Schramm does not explicitly disclose using a multicast signal.

Furuya discloses using a multicast signal (Abstract "a single transmit station transmits the same message to a plurality of receive stations" where the message is a multicast signal).

Schramm and Furuya are analogous because they both pertain to communications and retransmission of data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Schramm as discussed above as taught by Furuya in order to transmit information to multiple receivers at the same time.

Re claims 24 and 36:

Schramm discloses a "base station [sending a] retransmitting... signal or [a] new... signal by using a specific channel which is occupied for communication between a mobile station which receives [a] retransmitting... signal or [a] new ... signal and [a] base station" (Col.5 lines 26-29 "Each BTS...includes a number of TRXs (not shown) that use the uplink and downlink RF channels" where the downlink channels are used to send a retransmitted signal or a new multicast signal).

Re claim 25:

Schramm discloses "if [a] mobile station receives a retransmitted... signal without an error after sending a retransmission request signal to [a] base station when detecting an error in a received... signal, [the] mobile station does not perform error detection for a... signal which includes the same information as [the] retransmitted... signal and which is further retransmitted after receiving said

retransmitted...signal and when [a] mobile station does not detect any error in a received...signal, [the] mobile station does not send any signal" (Col.6 lines 64-67 "Mobile station...then signals to RBS...over a time multiplexed control channel provided on the uplink, for retransmission of block 40 using any well known ARQ routine" where the ARQ routines sends retransmission requests only when an error is encountered and does error correction until an error free signal is received).

Re claim 31:

Schramm discloses "if [a] mobile station receives a retransmitted...signal without an error after sending a retransmission request signal to [a] base station when detecting an error in a received...signal, [the] mobile station does not perform error detection for a...signal which includes the same information as [the] retransmitted...signal and which is further retransmitted after receiving said retransmitted...signal and when [a] mobile station does not detect any error in a received...signal, [the] mobile station does not send any signal" (Col.6 lines 64-67 "Mobile station...then signals to RBS...over a time multiplexed control channel provided on the uplink, for retransmission of block 40 using any well known ARQ routine" where the ARQ routines sends retransmission requests only when an error is encountered and does error correction until an error free signal is received).

Schramm does not explicitly disclose using a multicast signal.

Furuya discloses using a multicast signal (Abstract "a single transmit station transmits the same message to a plurality of receive stations" where the message is a multicast signal).

Schramm and Furuya are analogous because they both pertain to communications and retransmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Schramm as discussed above as taught by Furuya in order to transmit information to multiple receives at the same time.

10. Claims 1,3,5,7-9,10, and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu (US 6,519,278) in view of Furuya.

Re claims 1,5,8, and 10:

Hiramatsu discloses "a mobile station in [a group of] mobile stations sending a retransmission request signal to [a] base station when [a] mobile station detects an error in a received...signal" (Col.4 lines 30-32 "means for transmitting a control signal for a request for re-transmission of the data by using a reverse link for voice from the mobile station to the base station" where re-transmission is requested after an error is detected Col.13 lines 2-4 "Thereafter, in the mobile station, receiving quality presumption using, for example, the determination based on CRC is carried out" where CRC is a method of checking for errors).

Hiramatsu further discloses a "base station judging whether a received signal indicates a retransmission request according to receiving quality of said

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received signal, and retransmitting a...signal corresponding to said retransmission request when said received signal indicates said retransmission request" (Col.4 lines 1-4 "means for detecting quality values of a receiving signal with respect to individual spreading codes; means for deciding whether or not the detected quality values exceed a prescribed quality value").

Hiramatsu does not explicitly disclose using a multicast signal.

Furuya discloses using a multicast signal (Abstract "a single transmit station transmits the same message to a plurality of receive stations" where the message is a multicast signal).

Hiramatsu and Furuya are analogous because they both pertain to communications and retransmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hiramatsu as discussed above as taught by Furuya in order to transmit information to multiple receivers at the same time.

Re claims 3,7,9, and 12:

Hiramatsu discloses a "mobile station [sending] spreading code as [a] retransmission request signal, and [a] base station [obtaining] receiving quality of [the] spreading code, and [the] base station [judging] that [the] received signal is [a] retransmission request when [the] receiving quality is greater than a threshold" (Col.4 lines 19-20 "A...transmitting/receiving apparatus using a plurality of spreading codes" and Col.4 lines 1-4 "means for detecting quality values of a receiving signal with respect to individual spreading codes; means for

deciding whether or not the detected quality values exceed a prescribed quality value”).

11. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raitola (US 6,317,418) in view of Furuya.

Re claim 21:

Raitola discloses a “mobile station measuring receiving quality of a...signal, and judging whether [the] mobile station ends a retransmission request signal according to a result of [the] measuring” (Col.3 lines 47-51 “the receiver measures the quality of a received transmission unit, and if the quality of the transmission unit is lower than the predetermined quality level required of a transmission unit, the receiver requests at least one retransmission”).

Raitola discloses a “base station retransmitting a...signal corresponding to [the] retransmission request signal when [the] base station receives [the] retransmission request a signal from [the] mobile station” (Col.13 lines 52 and 53 “the transmitter retransmits the requested transmission units to the receiver”).

Raitola does not explicitly disclose using a multicast signal.

Furuya discloses using a multicast signal (Abstract “a single transmit station transmits the same message to a plurality of receive stations” where the message is a multicast signal).

Raitola and Furuya are analogous because they both pertain to communications and retransmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Raitola as discussed above as taught by Furuya in order to transmit information to multiple receivers at the same time.

Re claim 23:

Raitola discloses "receiving quality [being] receiving power of a received... signal, a ratio (CIR) between received... signal and interference power, an error rate of bit, packet or slot of a received... signal, or, a correction bit number or likelihood obtained when decoding error correction code" (Col.9 lines 16-19 "The quality of a transmission unit is typically determined by measuring the signal-to-noise ratio of the transmission unit, and the quality of a packet is determined by checking the CRC of the packet").

12. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu in view of Furuya and further in view of Karasawa (US 5,347,535).

As discussed above, Hiramatsu in view of Furuya meets all the limitations of the parent claim.

Hiramatsu in view of Furuya does not explicitly disclose a "base station [performing path] diversity for receiving a signal from [a] mobile station."

Karasawa discloses "base station [performing path] diversity for receiving a signal from [a] mobile station" (Col.8 line 68 and Col.9 lines 1-2 "said base station provided with respective receiving sections each of which has a path diversity function").

Hiramatsu in view of Furuya and Karasawa are analogous because they all pertain to communication systems.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hiramatsu in view of Furuya as discussed above as taught by Karasawa in order to "[reduce] multipath fading" (Karasawa Col.9 line 2).

13. Claims 18,27, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya in view of Nokia Telecommunications (Nokia) (WO 99/01950).

Furuya discloses "a mobile station sending a retransmission request signal to [a] base station when [a] mobile station detects an error in a received multicast signal" (Col.2 lines 34-36 "each of the receive stations checks more than one received packets for error and sends back to the transmit station a repeat request signal").

Furuya further discloses a "retransmitting a multicast signal" (Col.2 lines 39-44 "the transmit station senses energy of each of the bursts of the signals sent from the receive stations and determines packets to retransmit).

Furuya does not explicitly disclose "determining directivity of an antenna on the basis of an incoming wave from [a] mobile station...and retransmitting a multicast signal by using said directivity."

Nokia discloses determining directivity of an antenna on the basis of an incoming wave from [a] mobile station...and retransmitting a multicast signal by using said directivity" (Pg.6 lines 32-34 "information obtained over a longer time

can be used in the estimation of the direction of arrival, whereby the antenna beam can be directed more accurately”).

Furuya and Nokia are analogous because they both pertain to communications between base stations and mobile stations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Furuya as discussed above as taught by Nokia in order to alleviate the “sensitivity to noise or [limit] the number of antennas” used (Nokia Pg.6 lines 15-16).

14. Claims 22,29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raitola in view of Furuya and further in view of Chuang (US 6,823,005).

Raitola in view of Furuya meets all the limitations of the parent claims.

Raitola additionally discloses storing “the retransmission request” (Col.6 lines 15-17 “The originally transmitted transmission unit and retransmitted units as well as their autocorreolation values are stored in memory” where the storing the autocorrelation value is similar to storing a retransmission request because the retransmission request can be determined by the autocorrelation value).

Raitola in view of Furuya does not explicitly disclose “when [a] mobile station detects an error in [a] multicast signal, [the] mobile station sends [a] retransmission request signal when [the] receiving quality is better than a predetermined value, and [the] mobile station stores [the] retransmission request signal when [the] receiving quality is not better than a predetermined value; and

[the] mobile station sends [the] retransmission request signal which is stored when receiving quality becomes better than a predetermined value.”

Chuang discloses “when [a] mobile station detects an error in [a] multicast signal, [the] mobile station sends [a] retransmission request signal when [the] receiving quality is better than a predetermined value, and [the] mobile station stores [the] retransmission request signal when [the] receiving quality is not better than a predetermined value; and [the] mobile station sends [the] retransmission request signal which is stored when receiving quality becomes better than a predetermined value” (Figure 7 where if the SIR (“receiving quality”) is better than the threshold, there is transmission as seen at time 720 and when it is below the threshold there is no transmission as seen at time 730. Additionally, once the SIR goes above a threshold, the transmission continues again as seen at time 730).

Raitola in view of Furuya and Chuang are analogous because they all pertain to retransmitting data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Raitola in view of Furuya as discussed above as taught by Chuang “in order to maximize throughput” (Chuang Col.3 lines 24-25).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fukushima (US App. 2003/009717) discloses retransmitting packets based on priority.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad S. Adhami whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSA 11/18/2005



HANH NGUYEN
PRIMARY EXAMINER